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In the present invention, a procedure is described which allows for the efficient delivery of gene and cell based vaccines to the rectal mucosal tissue, and which results in efficient and prolonged transferred gene expression in the mucosal tissue resulting in a potent local mucosal immune response directed against the antigen encoded by the administered nucleic acid. This invention provides a unique and potent approach for the development of vaccines and vaccination strategies to develop mucosal immune protective responses in the lower GI and GU tract in the prevention and/or treatment of sexually transmitted diseases and other conditions. This approach also provides a means for the successful transfer of genetic material in gene therapy approaches in the treatment or prevention of colonic diseases.